

LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE.—VIII.

BY HARRISON G. DYAR, WASHINGTON, D. C.

Calocampe undulata Linn. The larva that bears this name in Europe is well known, having been frequently described and figured. (See Hofmann, Raup. Gross-Schmett. Eur., p. 230). The American larva has been described only by Fitch. Our larva differs decidedly in habit, coloration and food plant from the European one, so that it hardly seems as if they could be the same species. Newman says the European moth lays the eggs singly, or at least never adjoining each other, and the larvae are not decidedly gregarious and Hofmann does not contradict this. The European larva has a brown head and is gray below, brown above, faintly lined with black, the dorsal line finely edged with whitish and with a whitish stigmatal line. The food plant is willow. The following description will show how our larva differs:—

Eggs. Laid in a pile, nine square and four layers deep, the upper layers composed of less eggs than the lower and consequently smaller, but on one side all the layers are equal. Elliptical, strongly flattened above and below and a little so on the sides by mutual pressure, the ends rounded, the one toward the tapering side of the pile a little depressed, none truncate; reticulations flattened, not raised, the egg indistinctly a many-sided polygon; reticulations whitish, not very distinct. Color green, then pinkish yellow, finally gray before hatching; size .6 x .4 x .3 mm.

Stage I. Head pale yellow, ocelli black; round, slightly bilobed, no marks; width 3 mm. Body somewhat robust, not elongate, feet normal; ochrous yellow, all the tubercles distinct and broadly dark brown, large, bearing dark, swollen-tipped setae. Cervical shield not cornified, concolorous, the

tubercles also brown and distinct as on the body; anal plate and anal leg plates triangular, dusky. Tubercle vi absent. The larvae spun up gregariously a silky web at the tip of a leaf and fed therein.

Stage II. Head rounded bilobed, shining pale yellow; width .5 mm. Body translucent yellowish, tubercles large, black; a broad, shaded, subdorsal black band and a faint, narrower dorsal one. Shields and feet pale; setae moderate, dusky.

Stage III. Head round, full, slightly bilobed, shining reddish orange; width 1.1 mm. (Calculated should be .9 mm.) Body thick, short, a little flattened; pale green with dorsal, addorsal and subdorsal broad, straight black lines with only narrow spaces between, the subdorsal broadest and edged with whitish below. Tubercles and spiracles black; cervical shield pale centrally, black at the sides; anal plate and large leg-shield black; setae short, pale.

Stage IV. Head as before, shining reddish orange; width 1.5 mm. Body as before, the dorsal and addorsal lines black, their narrow interspaces forming pulverulent yellowish white lines on the broad dark dorsum; subdorsal line reaches tubercle iii and is edged below by a suprastigmatal, narrow, yellowish line. Subventer dull yellowish with faint, pale, subventral line and rings about tubercles vii. Feet and venter pale, spiracles black ringed; anal plate and large anal leg-shields deep black; cervical shield red like the head, black on the lateral margins; tubercles black, moderate; setae rather long, fine, pale.

The larvae live till maturity gregariously within the leaves which they spin together and eat off the upper epidermis and parenchyma. Whole shoots may be thus spun up

by one brood of larvae, the leaves turned brown and withered.

Two broods in the year. Winter passed as pupa in the ground. The larva is common in New York and New Jersey on the wild

cherry (*Prunus serotina*), its only food plant. Were this plant of any economic importance, this Geometrid would be classed among the injurious species.

LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE.—IX.

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Therina athasiaria Walker. The moth was determined by Dr. Hulst.

The only reference to the early stages of this species is by Dr. Packard (*Therina seminudaria*, Rept. ent. U. S. dept. Agr., 1886, p. 329; 5th rept. U. S. ent. comm., p. 777), who describes a pupa and gives as food plant white pine. But as this is not the food plant of *T. athasiaria*, I doubted the determination. The doubt was confirmed by finding Dr. Packard's bred moth, with his label attached in the National Museum. It proves to be *T. pellucidaria* G. & R. Therefore the early stages of *T. athasiaria* have not been previously referred to.

Egg. Elliptical, narrowing a little at one end, and smoothly truncate at the other, shining dark bluish green. The truncate surface is distinctly limited, and a little bulging centrally. Surface neatly reticulate in rounded areas, the reticulations not shiny, not elevated. Size $.8 \times .6 \times .5$ mm. The color changed to a gray green, and latter to sordid pink. Apparently laid in nature in the cracks of the bark. In confinement the moth deposited them between the cover and the glass, and under some paper lying in the bottom. The eggs hatched in ten days.

Stage I. Head large, round, dark brown, mouth region a little paler brown; setae short, stiff and pale, from minute dark tubercles; width about .35 mm. Body whitish, thorax and joints 10 to 13 dorsally, and circling bands on joints 4 to 9 dark red-brown. Smooth, no projections. The brown on the

thorax is a slight shading, on joints 10 to 13 it is in dorsal and subdorsal bands; feet pale; no longitudinal bands on the central portion, except a very faint and slender brown lateral line which connects the transverse bands. The larvae were very active, and much annoyed by the presence of others of the same species, so that many died before a few were finally induced to feed.

Stage II. Head white, a little sordid, shaded with blackish at the vertex, and sides posteriorly; eyes black; with .6 mm. Body all opaque white, a little grayish, no marks, except a few tiny dark brown specks subdorsally centrally on the segments. In some, this forms a slender subdorsal line with a few faint dots besides. Tubercles brown; segments rather finely annulated. Setae short and pale.

Stage III. Head 1.0 mm. As before. Head white with many small brown-black specks: thicker at the sides posteriorly and in the sutures of clypeus; rounded bilobed, higher and wider than joint 2. Body pale gray with a slight greenish tint, obscurely longitudinally lined with several whitish lines, and sparsely black speckled. Tubercles i and ii, small subdorsal shades posteriorly on the segments, a subventral broken line, and medioventral dashes compose these speckles. Foot of joint 10, and sides of thorax darkly shaded. Anal plate rounded, not black marked. Setae obscure, pale. The larvae were still very active, and difficult to feed.